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SYSTEM AND METHOD FOR 3-D DIGITAL RECONSTRUCTION OF AN ORAL CAVITY FROM A SEQUENCE OF 2-D IMAGES

10 # ABSTRACT OF THE DISCLOSURE

Systems and methods are provided through which a model-based vision system for dentistry which assists in diagnosis, treatment planning and surgical simulation. The present invention includes an integrated computer vision system that constructs a three-dimensional (3-D) model of the patient's dental occlusion using an intra-oral video

15 camera. A modified shape from shading technique, using perspective projection and camera calibration, extracts the 3-D information from a sequence of two-dimensional images of the jaw. Data fusion of range data and 3-D registration techniques develop a complete 3-D digital jaw model. Triangulation of the 3-D digital model is then performed, and optionally, a solid 3-D model is reconstructed.

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